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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KAI H. CHANG, DAVID KALISH,  
and THOMAS JOHN MILLER

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Appeal 2009-1503  
Application 10/620,068  
Technology Center 1700

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Decided:<sup>1</sup> February 20, 2009

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Before CHUNG K. PAK, BEVERLY A. FRANKLIN, and  
MARK NAGUMO, *Administrative Patent Judges*.

Opinion for the Board entered by FRANKLIN, *Administrative Patent Judge*.

Opinion concurring filed by NAGUMO, *Administrative Patent Judge*.

FRANKLIN, *Administrative Patent Judge*.

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

## DECISION ON APPEAL

### STATEMENT OF THE CASE

Appellants seek our review under 35 U.S.C. § 134 of the final rejection of claims 1-8 and 10. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

Claim 1 is representative of the subject matter on appeal and is set forth below:

1. A method for making optical fiber, the method comprising the steps of:

forming a glass core rod by soot deposition, the glass core rod having a core region surrounded by a cladding region;

dehydrating the glass core rod;

consolidating the glass core rod to form an optical fiber preform;

drawing fiber from the optical fiber preform, wherein the drawn optical fiber has a transmission loss at 1385 nm that is less than 0.33 dB/km; and

exposing the drawn optical fiber to an atmosphere containing deuterium at room temperature, wherein the partial pressure of deuterium is between approximately 0.01 and 0.05 atmospheres, and wherein the drawn optical fiber is exposed to the atmosphere containing deuterium for a time period that is sufficient to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Atkins	5,287,427	Feb. 15, 1994
Lemaire	5,478,371	Dec. 26, 1995

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“Room Temperature”, <http://www.everything2.com> (last visited Sept. 2, 2005) (hereafter “Exhibit A”).

The prior art relied upon by Appellants in rebutting the § 112, second paragraph, rejection is:

Exhibit A: “Room Temperature”, <http://www.everything2.com> (last visited Sept. 2, 2005) (hereafter “Exhibit A”).

Exhibit B: “Room Temperature”, *The Condensed Chemical Dictionary* 756 (Gessner G. Hawley et al. eds., 9<sup>th</sup> ed. 1977) (hereafter “Exhibit B”).

Exhibit C: “Room Temperature”, <http://www.answers.com> (last visited July 14, 2006) (hereafter “Exhibit C”).

## SUMMARY OF THE DECISION

We REVERSE.

## THE REJECTIONS AND ISSUES

I. Did the Examiner err in rejecting claims 1-8 and 10 under 35 U.S.C. § 112, second paragraph, as being indefinite by asserting that the definition of “room temperature” is unclear, and by asserting the claimed phrase “sufficient to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km” is unclear.

II. Did the Examiner err in rejecting claims 1-8 and 10 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement by asserting that there is no support in the Specification for the phrase “to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km”?

III. Did the Examiner satisfy his burden of establishing a prima facie case of obviousness in rejecting claims 1-8 and 10 under 35 U.S.C. § 103(a) as being obvious over Atkins or Lemaire?

#### FINDINGS OF FACT

I. Page 1 of the Everything2.com reference indicates that the term “room temperature” is usually recognized by chemists to mean 25 °C. This reference distinguishes what this term means to chemists versus what it means in other contexts. The Examiner acknowledges on page 4 of the Answer that the Everything2.com reference discloses a narrow range recognized by “physicists”.

Exhibit B defines “room temperature” as being from 20 to 25 °C.

On page 2 of Exhibit C, Exhibit C teaches that for scientific calculations, “room temperature” is taken to be roughly from 20 to 25 °C.

II. Paragraph [0014] of Appellants’ Specification discloses that “the inventive optical fibers have transmission loss at 1385 nanometers that is less than 0.33 dB/km and the loss increase thereafter is less than 0.04 dB/km”. Paragraph [0044] discloses that “optical fiber that was exposed to deuterium . . . and whose preform was manufactured in one or more oxygen-improved environments, exhibits transmission loss (at 1385 nm) that is less than 0.33 dB/km and hydrogen aging loss increase thereafter is less than 0.04 dB/km”. Paragraph [0046] discloses that the “optical fibers 54 manufactured according to embodiments of the invention typically have

transmission losses less than 0.33 dB/km at 1385 nm, and the hydrogen aging loss increase thereafter is less than 0.04 dB/km”.

III. In paragraph [0012], the Specification discloses that Appellants’ invention is directed to a method for making optical fiber having reduced aging or hydrogen aging loss over the life of the fiber. Embodiments of the invention are said to provide improved silicon-oxygen stoichiometry in fiber manufacturing environments to reduce the amount of Si defects in an optical fiber preform, combined with subsequent deuterium exposure of the fiber drawn from the preform. It is described that a fiber formed according to the disclosed process steps has improved transmission characteristics. *See also* paragraphs [0034] through [0046].

Neither Atkins nor Lemaire specifically disclose a drawn fiber having a transmission loss at 1385 nm that is less than 0.33 dB/km, and wherein the drawn optical fiber is exposed to the atmosphere containing deuterium for a time period that is sufficient to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km.

## PRINCIPLES OF LAW

I. The test of definiteness is whether one skilled in the art would understand the bounds of a claim when it is read in light of the specification. *Morton Intern., Inc. v. Cardinal Chem. Co.*, 5 F3d 1464, 1470 (CAFC 1993); *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F2d 1565, 1576 (CAFC 1986). The statutory “person having ordinary skill in the art” is a hypothetical person possessing knowledge in the field to which the claimed “subject matter pertains” and the level of that knowledge is somewhere

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between that possessed by the layman and that possessed by the expert. *Ex parte Hiyamizu*, 10 USPQ2d 1393, 1394 (BPAI 1988). Patentability is determined on the totality of the record, by a preponderance of evidence with due consideration to persuasiveness of argument. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed.Cir. 1992).

II. “[I]t is not necessary that the application describe the claimed invention in *ipsis verbis*”, but rather “all that is required is that it reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventor had possession of the subject matter later claimed by him.” *In re Edwards*, 568 F.2d 1349, 1351-1352 (CCPA 1978); *In re Lukach*, 442 F.2d 967, 969 (CCPA 1971). The PTO has the burden of proving that one skilled in the art would not recognize the invention as defined in the claims from the disclosure. *In re Voss*, 557 F2d 812, 817 (CCPA 1977).

III. The burden is on the PTO to establish a *prima facie* case of obviousness. *In re Warner*, 379 F2d 1011, 1016-1017 (CCPA 1967). “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”. *In re Kahn*, 441 F.3d 977, 988 (C.A.Fed.2006).

## ANALYSIS

### I. The Rejection of Claims 1-8 and 10 under 35 U.S.C. § 112, Second Paragraph, as being Indefinite.

With regard to the claimed phrase “room temperature”, the Examiner believes that this phrase is indefinite because Appellants’ Specification does not indicate or give examples as to what temperatures do or do not read on “room temperature”. In support of this position, the Examiner relies on the Everything2.com reference, and states that this reference teaches that “room temperature” can range from -10 °C to 50 °C (Ans. 4).

Appellants argue that the Everything2.com reference teaches a more narrow temperature range for defining “room temperature” when viewed by, for example, chemists (25 °C), versus the broad range as expressed by the Examiner of from -10 °C to 50 °C. Even the Examiner points out, on page 4 of the Answer, that the Everything2.com reference discloses a narrow range recognized by “physicists”.

In addition, Appellants point to evidence in Exhibit B and C to show that one of ordinary skill in the art would have understood “room temperature” as a temperature embracing from 20 to 25 °C. (Br. 8-9).

In view of the totality of the record and the preponderance of the evidence before us, Appellants have shown that the Examiner has not established that one of ordinary skill in the art would not have understood the meaning of the term “room temperature” as a temperature range embracing from 20 to 25 °C.

With regard to the phrase “to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km”, the Examiner states that this phrase is indefinite as to whether it means that it limits at least

one increase, or that it means that there is no manner in which there can be such an increase (Ans. 4).

Appellants explain that claim 1 requires that after deuterium treatment, transmission loss at 1385 nm will never be greater than 0.37 dB/km (i.e., 0.33 dB/km prior to the deuterium treatment + 0.04 dB/km attributable to hydrogen aging subsequent to the deuterium treatment), and this transmission loss applies to the entire lifetime of the optical fiber (be it a nanosecond or 40 years) (Br. 9). Appellants state that paragraph [0030] of the Specification indicates that the hydrogen-aging loss refers to the increase in loss during the lifetime of the optical fiber, and its lifetime begins before deuterium treatment (Br. 9-10). Appellants also refer to paragraphs [0014], [0044], and [0046] of the Specification, which state that the "loss increase thereafter is less than 0.04 dB/km" (Br. 10).

As is apparent from paragraphs [0014], [0044] and [0046] of the Specification, Appellants correctly assert at pages 9 and 10 of the Brief that the word "thereafter" clearly applies to any time after its initial transmission loss at 1385 nm of 0.33 dB/km, or less.

Hence, we agree with Appellants that the plain language of claim 1 and the Specification clearly indicate that the transmission loss, after the claimed deuterium treatment, is limited to 0.04 dB/km.

In view of the above, the Examiner erred in rejecting claims 1-8 and 10 under 35 U.S.C. § 112, second paragraph, as being indefinite.

II. The Rejection of claims 1-8 and 10 under 35 U.S.C. § 112, First Paragraph, Written Description.

On page 5 of the Answer, the Examiner asserts that there is no support for the phrase “to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km.”

We note that “it is not necessary that the application describe the claimed invention in *ipsis verbis*”, but rather “all that is required is that it reasonably convey to persons skilled in the art that, as of the filing date thereof, the inventor had possession of the subject matter later claimed by him.” *Edwards*, 568 F.2d at 1351-1352; *Lukach*, 442 F.2d at 969. We also note that the PTO has the burden of proving that one skilled in the art would not recognize the invention as defined in the claims from the disclosure. *In re Voss*, 557 F2d 812, 817 (CCPA 1977).

Appellants explain that claim 1 requires that after deuterium treatment, transmission loss at 1385 nm will never be greater than 0.37 dB/km (i.e., 0.33 dB/km prior to the deuterium treatment + 0.04 dB/km attributable to hydrogen aging subsequent to the deuterium treatment), and this transmission loss applies to the entire lifetime of the optical fiber (be it a nanosecond or 40 years) (Br. 9). Appellants state that paragraph [0030] of the Specification indicates that the hydrogen-aging loss refers to the increase in loss during the lifetime of the optical fiber, and its lifetime begins before deuterium treatment (Br. 9-10). Appellants also refer to paragraphs [0014], [0044], and [0046] of the Specification, which state that the “loss increase thereafter is less than 0.04 dB/km” (Br. 10).

Paragraph [0014] discloses that “the inventive optical fibers have transmission loss at 1385 nanometers that is less than 0.33 dB/km and the

loss increase thereafter is less than 0.04 dB/km". Paragraph [0044] discloses that "optical fiber that was exposed to deuterium . . . and whose preform was manufactured in one or more oxygen-improved environments, exhibits transmission loss (at 1385 nm) that is less than 0.33 dB/km and hydrogen aging loss increase thereafter is less than 0.04 dB/km". Paragraph [0046] discloses that the "optical fibers 54 manufactured according to embodiments of the invention typically have transmission losses less than 0.33 dB/km at 1385 nm, and the hydrogen aging loss increase thereafter is less than 0.04 dB/km".

In view of the above, there is support for the phrase "to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km".

We therefore find that the Examiner erred in rejecting claims 1-8 and 10 under 35 U.S.C. § 112, first paragraph, written description.

### III. The Rejection of Claims 1-8 and 10 under 35 U.S.C. § 103(a) as being Obvious over Atkins or Lemaire

Appellants teach that embodiments of the invention provide improved silicon-oxygen stoichiometry in fiber manufacturing environments to reduce the amount of Si defects in an optical fiber preform, combined with subsequent deuterium exposure of the fiber drawn from the preform. It is said that such process steps achieve a drawn optical fiber having a transmission loss at 1385 nm that is less than 0.33 dB/km, and one which is limited to any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km. *See*, e.g., paragraphs [0034] through [0046] of Appellants' Specification.

The Examiner concludes on page 9 of the Answer that it would have been obvious to have selected a drawn fiber having the claimed transmission loss value of less than 0.33 dB/km, because the more loss means the weaker the signals over long distances, so one would select a transmission loss value as low as possible. Yet, the Examiner does not explain how one of ordinary skill in the art would have obtained such a drawn fiber having a transmission loss at 1385 nm that is less than 0.33 dB/km. Appellants teach that the drawn fiber is obtained by providing improved silicon-oxygen stoichiometry in the fiber manufacturing process. The Examiner has not established that drawing a fiber having a transmission loss at 1385 nm that is less than 0.33 dB/km was known at the time of the invention. In fact, on pages 8-9 of the Answer, the Examiner acknowledges that Atkins<sup>2</sup> is silent about the transmission loss value of the drawn fiber.

Nor has the Examiner established a reasonable basis to conclude that the fibers taught by Atkins, more likely than not, have the properties required by the claims. In particular, the Examiner's interpretation of the aspect of claim 1 regarding "to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km", as expressed on page 18 of the Answer, is not a reasonable interpretation of the claim. Therein, the Examiner states that "any increase that occurs one second after the exposure would be during the lifetime of the optical fiber". The Examiner effectively reads the limitation out of the claim, in contrast to the ordinary

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<sup>2</sup> Lemaire is equally silent about the transmission loss value of the fiber. On page 11 of the Answer, the Examiner acknowledges this by stating "Lemaire is applied in substantially the same fashion as Atkins. Namely, most of the limitations regarding the creation of the fiber are immediately inferred by one of ordinary skill".

meaning of the phrase “any future . . . ,” which, consistent with Appellants’ disclosure, is that, throughout the lifetime of the fiber, the hydrogen aging loss is less than 0.04 dB/km. Moreover, the Examiner has not shown that the method suggested by Atkins has a reasonable expectation of success of achieving the claimed transmission loss, as properly interpreted.

Hence, the Examiner’s reasoning in support of obviousness is incomplete. “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”. *In re Kahn*, 441 F.3d 977, 988 (C.A.Fed.2006). Thus, the Examiner has improperly attempted to shift the burden to Appellants to distinguish the claimed subject matter over the prior art. Cf. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990) (“when the PTO shows sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.”)

In view of the above, we therefore reverse the rejection of claims 1-8 and 10 under 35 U.S.C. § 103(a) as being obvious over Atkins. For essentially the same reasons, we also reverse the rejection involving Lemaire. *See* footnote 2, *supra*.

## CONCLUSIONS OF LAW

I. The Examiner did err in rejecting claims 1-8 and 10 under 35 U.S.C. § 112, second paragraph, as being indefinite by asserting that the definition of “room temperature” is unclear, and by asserting the claimed phrase “sufficient to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km” is unclear.

II. The Examiner did err in rejecting claims 1-8 and 10 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement by asserting that there is no support in the Specification for the phrase “to limit any future hydrogen-aging increase in transmission loss at 1385 nm to less than 0.04 dB/km”.

III. The Examiner did not satisfy his burden of establishing a prima facie case of obviousness in rejecting claims 1-8 and 10 under 35 U.S.C. § 103(a) as being obvious over Atkins or Lemaire.

#### DECISION

I. The rejection of claims 1-8 and 10 under 35 U.S.C. § 112, second paragraph, as being indefinite is reversed.

II. The rejection of claims 1-8 and 10 under 35 U.S.C. § 112, first paragraph, written description is reversed.

III. The rejection of claims 1-8 and 10 under 35 U.S.C. § 103(a) as being obvious over Atkins or Lemaire is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(effective Sept. 13, 2004).

REVERSED

NAGUMO, *Administrative Patent Judge*, concurring.

I join my colleagues as to the disposition of Rejection I in this case, but on a significantly more limited basis. The Examiner erred, in my view, by failing to recognize that “[b]readth is not to be equated with indefiniteness . . . .” *In re Miller*, 441 F.2d 689, 693 (CCPA 1971). Distinguishing among the views of “physicists” and “chemists” is not, in general, a useful enterprise, particularly in an area as sophisticated as the manufacture of optical fibers for long distance communications. I find no credible evidence in the present record that those skilled in the manufacture of such optical fibers observe such niceties. In any event, Applicants have gone on record as to what they meant by the term “room temperature,” and the Examiner has not identified any “insoluble ambiguity” due to the use of that term, no matter how defined.

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